Frontend Framework

React

What is React?

- UI Library
- Component-based
  - Reusable
- Declarative API
  - https://codeburst.io/declarative-vs-imperative-programming-a8a7c93d9ad2

Input อะไรเข้าไป แล้วผลลัพธ์เปลี่ยนอะไร

สามีหน้าที่ใส่องค์ประกอบให้ครบ

React components

- JSX
- Element & component
- State & Props
- Virtual DOM

Setting up Tools and Environment

- Node.JS
  - https://nodejs.org/en/
- Yarn
  - Package manager
    - Installing Node.js' dependencies
  - For Node.js version higher than 16.10
    - Enable [corepack] via corepack enable
    - Run the above command as an Admin
- Visual Studio Code
  - Install plugins:
    - ESLint
    - Prettier-Code formatter
      - Setting-> search format -> editor: Format On Save ☑
    - Vscode-styled-components
- Chrome Extension
  - React Developer Tools: https://chrome.google.com/webstore/detail/react-developer-tools/fmkadmapgofadopljbjfkapdkoienihi?hl=en

Create React project

- Change to target folder
- Run command
  - `yarn create react-app project_name`
- After complete
  - VS menu open folder -> project_name
  - From menu Terminal -> new
    - `yarn start`

Concept

- UI is the function of state

$$UI = f(state)$$

JavaScript XML (JSX)

- Using XML in JavaScript
- Use {} to evaluate the expression

Element

- In react, html element can be defined using const as shown:

```
const h = <div><h1>SW Studio News03</h1></div>;
```

Header


CSS
import './App.css';
import { Component } from 'react';
Component object

Component creation (ES6 and earlier)

- Import React from 'react';

```
var NewsHead04 = React.createClass({
  render: function() {
    return(
      <div>
        <h1>SW Studio News</h1>
      </div>
    );
  }
});
```

Component creation (ES6)

- import { Component } from 'react';
- To create Component
  - Class's name must begin with capital letter

Example:

Class component

```
class NewsHead01 extends Component {
  render() {
    return (
      <div>
        <h1>SW Studio News</h1>
      </div>
    );
  }
}
```

Function component

```
function NewsHead02() {
  return (
    <div>
      <h1>SW Studio News</h1>
    </div>
  );
}
```

Component

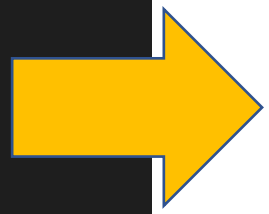
- import React from 'react';

```
class NewsHead01 extends React.Component {
  render() {
    return (
      <div>
        <h1>SW Studio News</h1>
      </div>
    );
  }
}
```

Component

- To create element with class

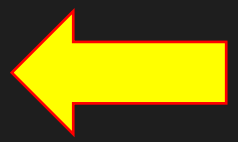
```
class NewsHead01 extends React.Component {
  render() {
    return (
      <div className='class01'>
        <h1>SW Studio News</h1>
      </div>
    );
  }
}
```



```
<div class='class01'>
  <h1>SW Studio News</h1>
</div>
```

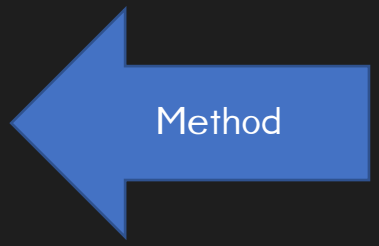
Using Component

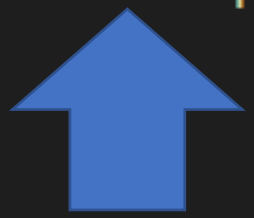
```
class Link01 extends Component {
  render() {
    return(
      <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg" >Click here</a>
    );
  }
}

class Block01 extends Component {
  render() {
    return(
      <div>
        <Link01 />
      </div>
    );
  }
}
```



Using JavaScript with element

```
class Link03 extends Component {
  display(ev) {
    alert(ev.target.href);
  }
  render() {
    return(
      <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg"
      onMouseOver={this.display}>Click here</a>
    );
  }
}
```





Event handling

```
const changecolor = event => {
    const e = event.target;
    e.style.color = 'blue';
    e.style.background = 'yellow';
  }
class Link01 extends Component {
  render() {
    return(
      <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg"
      onMouseOver={(event) => changecolor(event)}>Click here</a>
    );
  }
}
```

Event handling (cont.)

```
class Link02 extends Component {
  display(ev) {
    ev.target.style.color='blue';
    ev.target.style.background = 'yellow';
  }
  render() {
    return(
      <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg"
      onMouseOver={this.display}>Click here</a>
    );
  }
}
```

Props

- Props = Properties
- Props is an object that stores the value
- Props can be passed from parent component to child component
  - Uni-directional (parent to child only)
  - Props' data cannot be modified by the child component (read only)

Props example

```
class ShowTitle extends Component {
  render() {
    return (
      <h1>Headline {this.props.title}</h1>
    );
  }
}
class Block01 extends Component {
  render() {
    return(
      <div>
        <ShowTitle title="Headline 01" />
        <ShowTitle title="Headline 02" />
        <ShowTitle title="Headline 03" />
      </div>
    );
  }
}
```

State

- Data storage within component
- Creates and manages by component
- State cannot be passed to other components
- **used inside component only**
- When state changes, DOM re-rendering will occur
  - Just a part of DOM will be updated
  - Or more specific, only updated component will be re-rendered

State example

```
class ShowTitle extends Component {
  state = {
    datetime: new Date()
  }

  updatetime() {
    this.setState({datetime: new Date()});
  }

  render() {
    return (
      <div>
        <p>{this.state.datetime.toString()}</p>
        <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg"
          onMouseOver={this.updatetime.bind(this)}>Headline {this.props.title} </a>
      </div>
    );
  }
}
```

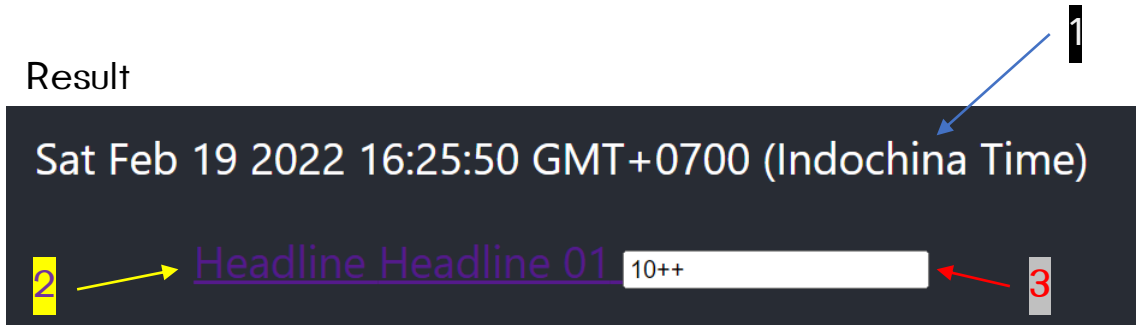
State & Props

	Props	State
Usage	Passing data	Inside the component only
Data modification	Read only	Yes, locally

More with state

```
class ShowTitle extends Component {
  state = {
    ticker: false,
    count: 0,
    datetime: new Date()
  }

  updatetime() {
    var num = this.state.count;

    num++;
    if (num>10)
      this.setState({ticker: true});

    this.setState({
      count: num,
      datetime: new Date()
    });
  }

  render() {
    var textval="";
    if (this.state.ticker===true)
      textval = '10++';
    else
      textval = this.state.count;

    return (
      <div>
        <p>{this.state.datetime.toString()}</p>
        <a href="https://sv1.picz.in.th/images/2022/02/06/nM1SyZ.jpg"
          onMouseOver={this.updatetime.bind(this)}>Headline {this.props.title} </a>
        <input type="text" value={textval} readOnly></input>
      </div>
    );
  }
}
```

Result

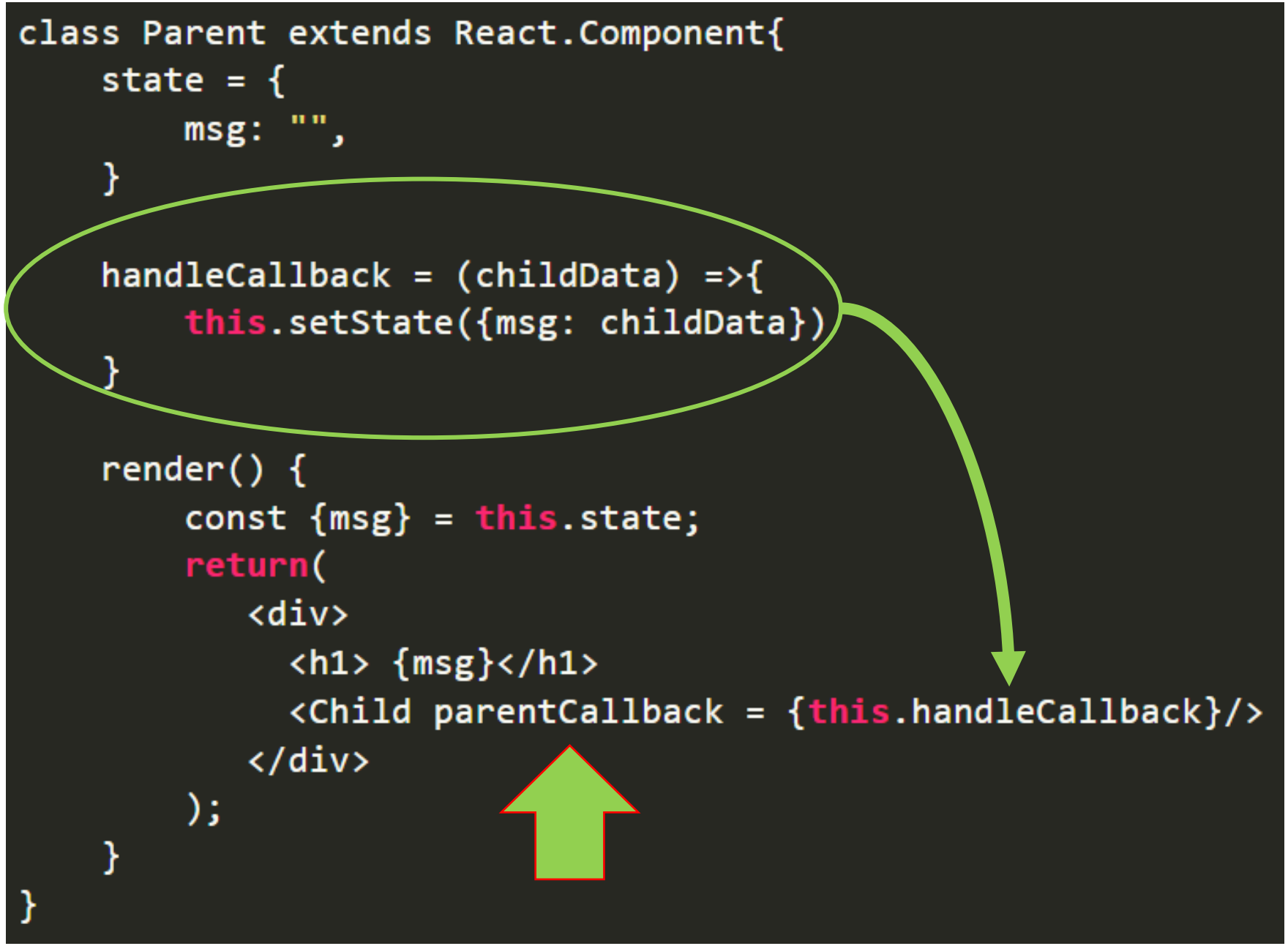


Passing data

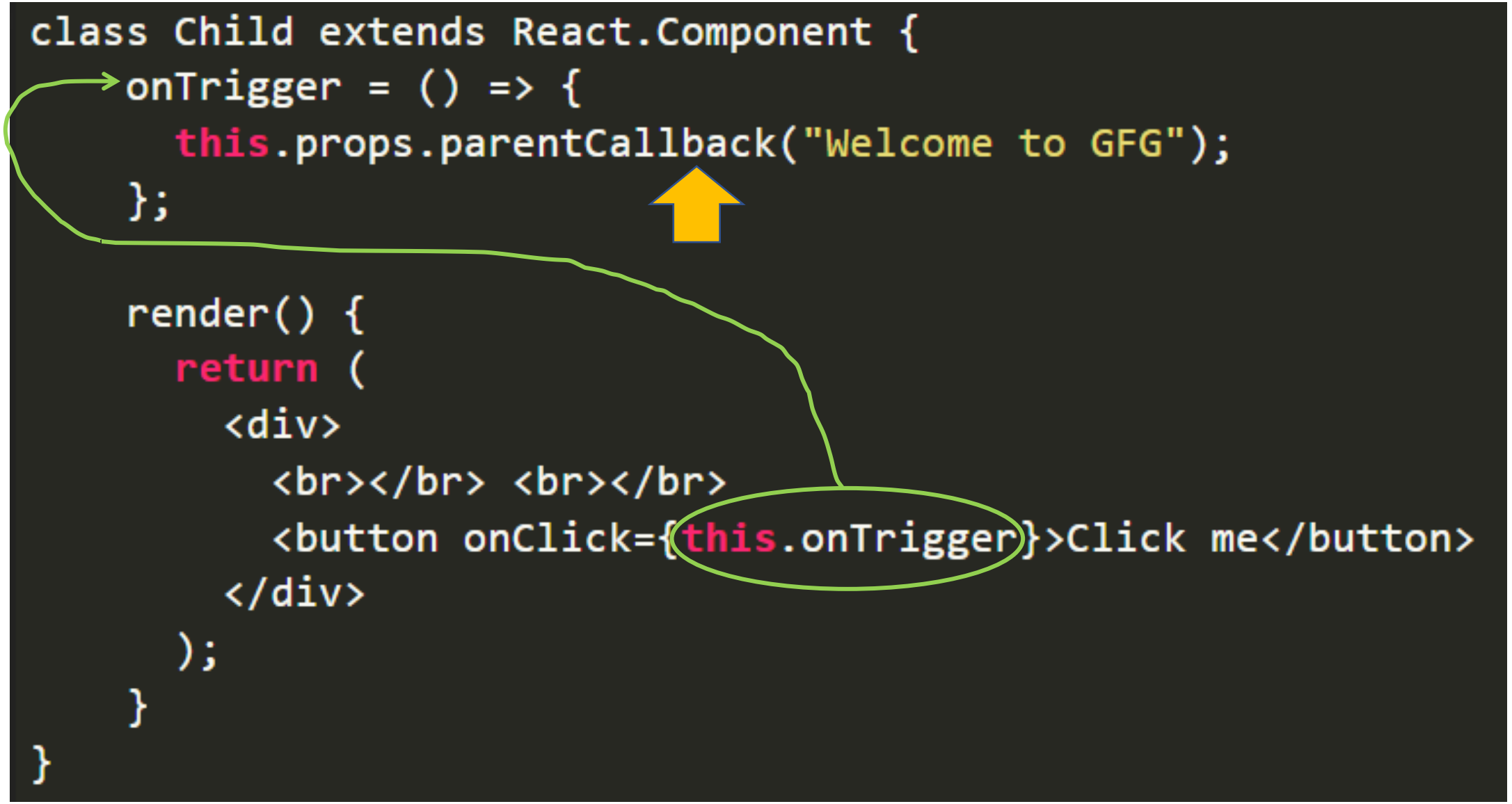
- From parent to child
  - Props

Passing data

- From child to parent
  - Callback function



https://www.geeksforgeeks.org/how-to-pass-data-from-one-component-to-other-component-in-reactjs/



https://www.geeksforgeeks.org/how-to-pass-data-from-one-component-to-other-component-in-reactjs/